

REMARKS

In response to the Official Action of May 18, 2007, claims 1-15 have been amended and claims 16-18 are newly submitted.

Claims 16 and 17 are supported by the original application, including claims 8 and 9. Claims 16 and 17 are directed to software program product claims dependent on amended claim 10 and incorporating features similar to claims 8 and 9 respectively.

Newly submitted apparatus claim 18 corresponds to claim 1, but is written using means plus function terminology.

Claims Rejections - 35 USC §101

At section 1, claim 10 is rejected as being directed to non-statutory subject matter with the contention that the readable medium is not a computer-readable medium encoded with instructions that when executed by a processor causes the processor to execute real-time functions and control functions.

Claim 10 as amended recites that the software code is stored on a computer readable medium and further that the software code when executed by at least one processor causes the processor to perform the recited real-time functions and control functions. This claim is therefore believed to be statutory under 35 USC §101.

Claim Rejections - 35 USC §102

At section 2, claims 1, 2, 7, 8, 10 and 14 are rejected under 35 USC §102(a) in view of the publication by Vehmanen. With respect to claim 1, it is asserted that Vehmanen discloses the claimed audio processing system, as well as the features recited in claim 1. Although claim 1 has been amended herein, the amendments are primarily directed to removal of reference signs and to make slight reformulation of the claim. Similar type amendment has been made to claims 2-14. The scope of the claims has not been altered.

In the arguments concerning claim 1, the Office asserts that Vehmanen discloses audio processing done in real-time using only deterministic execution, citing page 40,

section 6.3.3 of Vehmanen. However, it is respectfully submitted that the approach recited in claim 1 of the present application differs from what is presented in Vehmanen in that according to claim 1, real-time functions are executed using “a basically constant processing power”. Thus, claim 1 differentiates this feature on an audio processing component level by claiming the difference between real-time functions that are able to use this basically constant processing power and other functions that are referred to as control functions that may use a variable processing power.

The Office asserts that Vehmanen with respect to executing real-time functions “inherently uses ‘a basically constant processing power.’” Applicant respectfully disagrees. In Vehmanen, there is no disclosure showing use of constant processing power for real-time functions. More particularly, Vehmanen states that the real-time functions must be deterministic (see Vehmanen page 40, section 6.3.3) in terms of their execution time. However, “deterministic” only means that the execution time is bounded and not dependent on, for example, external sources of delay; therefore, operations in different usage situations may use a varying amount of processing power. For example, calculating signal processing parameters for a positional 3D audio algorithm from sound source locations is normally a deterministic process and would be classified to be a real-time function in the Vehmanen reference. However, such calculations would be classified as control functions in the approach of claim 1 to insure that the real-time functions may use a constant processing power.

In particular, Vehmanen’s examples of non-real-time functions only include functionalities that depend on peripherals external to the processor itself (see the discussion concerning the user interface, disk IO, and memory management) and therefore such processes are actually non-deterministic from the audio processing point-of-view.

The approach defined in claim 1, in which the real-time functions are selected such that they can be processed with a constant processing power, allows for smaller audio buffers and shorter signal delays throughout the system. Such an approach is not disclosed by Vehmanen.

Furthermore, it can be said that in general, in prior art approaches, audio software is usually divided into real-time and non-real-time functionalities on the system level. This means that, for example, the user interface portion or memory management is separated from the real-time audio processing on a high level. Contrary to this approach, the approach in claim 1 makes a division between the real-time and non-real-time functions on the audio processing component level. This approach makes it possible to run audio components with complex control handling functionalities in systems with very low audio delay, while hiding all of the complexity inside those components.

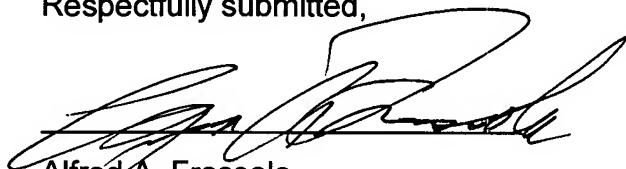
It is therefore respectfully submitted that the approach set forth in claim 1 is new and not obvious in view of Vehmanen.

Similarly, independent claims 7, 10 and 18 recite features corresponding to those set forth in claim 1 and are similarly believed to be not anticipated or suggested by Vehmanen.

Since each of the independent claims are believed to be patentable over Vehmanen, it is respectfully submitted that the dependent claims are further distinguished over Vehmanen whether taken alone or as recited in sections 3, 4 and 5, combined with additional art.

It is therefore respectfully submitted that the present application, as amended, is in condition for allowance and such action is earnestly solicited.

Respectfully submitted,



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